UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,574	08/05/2003	Ramin Shiekhattar	WSTR-0014C	1505

7590 05/13/2008

Licata & Tyrrell P.C.
66 E. Main Street
Marlton, NJ 08053

EXAMINER	
HOLLERAN, ANNE L	
ART UNIT	PAPER NUMBER
1643	
MAIL DATE	DELIVERY MODE
05/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/634,574	SHIEKHATTAR, RAMIN	
	Examiner	Art Unit	
	ANNE L. HOLLERAN	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 1/28/2008 is acknowledged.

Claim 13 is pending and examined on the merits.

Claim Rejections Withdrawn:

Claim Objections

Claim 13 is objected to because of the following informalities: the term BRCC36 is misspelled as "RBCC36" in line 5 of claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The rejection of claim 13 under 35 U.S.C. 102(e) as being anticipated by Chiu (US 2007/0010434 A1; effective filing date of 9/16/2002) is withdrawn in view of the amendment to the claim deleting a reference to BRE protein.

Claim Rejections Maintained and New Grounds of Rejection:

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 remains rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 refers to methods for identifying an agent that inhibits the expression of "BRCC36". The specification appears to limit BRCC36 to a protein with the sequence of SEQ ID NO: 10 (see page 5, lines 20-22). However, the claim refers to BRCC36 without mention of SEQ ID NO: 10. Therefore, it is not clear if the term in the claims "BRCC36" is narrow in scope, i.e. limited to single species, or if the term is broader in scope, including isoforms, or homologous proteins from other species.

Applicants' arguments are unpersuasive, because they did not address the scope of the claims.

The following new grounds of rejection is necessitated by the amendment canceling the reference to BRE protein, which was listed in the alternative with BRCC36.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson (Robinson, G.S. et al., Proc. Natl. Acad. Sci., USA, 93: 4851-4856, 1996) or Atkins (US 5,932,435; issued Aug 3, 1999) in view of Fisch (Fisch, P. et al, Oncogene, 8: 3271-3276, 1993) and further in view of Driver (Driver, S.E. et al, Nature Biotechnology, 17: 1184-1187, 1999).

Claim 13 is drawn to a method for identifying an agent that inhibits the expression of BRCC36 comprising contacting a cell expressing BRCC36 protein with a test agent and monitoring the ability of said agent to alter the expression of BRCC36 protein wherein said test agent is selected from the group consisting of an antisense molecule, a siRNA molecule, or a

RNAi molecule, or ribozymes targeted to nucleic acid sequences encoding BRCC36. An example of a BRCC36 polypeptide is that having the amino acid sequence of SEQ ID NO: 10.

Claim 13 reads on a method for testing various candidate antisense or ribozyme molecules that would be useful for inhibiting the in vivo expression of BRCC36. Such assays are known in the art as evidenced by the teachings of Robinson, which teaches assays for assessing candidate antisense molecules as inhibitors of expression of VEGF, and by the teachings of Atkins, which teaches methods for screening for antisense or ribozyme constructs (see abstract and claims 1-13). Robinson teaches assays in whole cells to assess by immunoprecipitation the effect of antisense molecules on the production of VEGF protein (see page 4853, Figure 2, and 2nd column, and page 4852, 1st column).

Neither Robinson nor Atkins teaches an assay for testing antisense molecules for their effect on BRCC36 (c6.1A) protein production (see alignment below of SEQ ID NO: 10 with Fisch's sequence). However, Fisch teaches the protein and cDNA sequences of BRCC36, and the association of disruption of the BRCC36 gene two cases of pro-lymphocytic leukemia (see abstract with respect to c6.1A, and page 3273, Figure 3), which occur as a consequence of chromosomal translocation, where the chromosomal break occurs in two different introns of the c6.1A gene. Thus, the prior art provides the structure necessary for designing candidate antisense molecules for inhibiting BRCC36 gene expression, and further the prior art teaches that assays for assessing such molecules are known in the prior art. Additionally, the prior art provides a motivation for combining the teachings of Robinson or Atkins with the teachings of Fisch for the purpose of testing candidate antisense molecules to find antisense or ribozyme molecules that effectively inhibit protein production, because Driver teaches that antisense

molecules are useful in a technique for analysis of gene function in utero to uncover both primary and secondary phenotypes (see page 1184 1st column of Driver). In view of the teachings of Fisch that loss of c6.1A gene expression occurs in examples of T-cell pro-lymphocytic leukemia, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have combined the methods of Robinson or Atkins with the teachings of Fisch which provide the structure of the BRCC36 (c6.1A) gene art to make the claimed method. The motivation would have been to further study the effect of c6.1A gene expression loss to discover its affect, if any, on T-cell leukaemogenesis.

Alignment of Fisch's sequence with SEQ ID NO: 10.

```
BRCC3_HUMAN
ID   BRCC3_HUMAN     STANDARD;      PRT;   316 AA.
AC   P46736; Q16107; Q9BTZ6;
DT   01-NOV-1995, integrated into UniProtKB/Swiss-Prot.
DT   10-MAY-2002, sequence version 2.
DT   27-JUN-2006, entry version 51.
DE   BRCA1/BRCA2-containing complex subunit 3.
GN   Name=BRCC3; Synonyms=C6.1A, CXorf53;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC   Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE [MRNA] (ISOFORM 1).
RC   TISSUE=Placenta;
RX   MEDLINE=93265009; PubMed=1303175;
RA   Kenwrick S., Levinson B., Taylor S., Shapiro A., Gitschier J.;
RT   "Isolation and sequence of two genes associated with a CpG island 5'
RT   of the factor VIII gene.";
RL   Hum. Mol. Genet. 1:179-186(1992).
RN   [2]
RP   NUCLEOTIDE SEQUENCE [MRNA] (ISOFORM 2), AND CHROMOSOMAL TRANSLOCATION.
RX   MEDLINE=94067776; PubMed=8247530;
RA   Fisch P., Forster A., Sherrington P.D., Dyer M.J.S., Rabbitts T.H.;
RT   "The chromosomal translocation t(X;14)(q28;q11) in T-cell pro-
RT   lymphocytic leukaemia breaks within one gene and activates another.";
RL   Oncogene 8:3271-3276(1993).
RN   [3]
RP   NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA] (ISOFORM 2).
RC   TISSUE=Lung;
RX   MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
```

```
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length human
RT   and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN   [4]
RP   FUNCTION, IDENTIFICATION IN BRCC COMPLEX, AND INTERACTION WITH BRCA1.
RX   MEDLINE=23001082; PubMed=14636569; DOI=10.1016/S1097-2765(03)00424-6;
RA   Dong Y., Hakimi M.-A., Chen X., Kumaraswamy E., Cooch N.S.,
RA   Godwin A.K., Shiekhattar R.;
RT   "Regulation of BRCC, a holoenzyme complex containing BRCA1 and BRCA2,
RT   by a signalosome-like subunit and its role in DNA repair.";
RL   Mol. Cell 12:1087-1099(2003).
CC   -!- FUNCTION: Plays a role in modulation of E3 ubiquitin ligase
CC       activity of the 2 subunit BRCA1/BARD1 complex.
CC   -!- SUBUNIT: Component of the BRCA1/BRCA2 containing complex (BRCC),
CC       which also contains BRCA1, BRCA2, BARD1, BRE and RAD51. BRCC is a
CC       ubiquitin E3 ligase complex that enhances cellular survival
CC       following DNA damage. Interacts with BRCA1.
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=2;
CC       Name=2;
CC         IsoId=P46736-1; Sequence=Displayed;
CC       Name=1;
CC         IsoId=P46736-2; Sequence=VSP_003261;
CC   -!- TISSUE SPECIFICITY: Heart, brain, placenta, lung, liver, skeletal
CC       muscle, kidney and pancreas.
CC   -!- DISEASE: A chromosomal aberration involving C6.1A is a cause of
CC       pro-lymphocytic T-cell leukemia (T-PLL). Translocation
CC       t(X;14)(q28;q11) with TCRA.
CC   -!- SIMILARITY: Belongs to the peptidase M67A family.
CC   -!- SIMILARITY: Contains 1 MPN (JAB/Mov34) domain.
CC   ----------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ----------------------------------------------------------------------
DR   EMBL; X66643; CAA46917.1; -; mRNA.
DR   EMBL; S68015; AAB29005.2; ALT_INIT; mRNA.
DR   EMBL; BC002999; AAH02999.1; -; mRNA.
DR   EMBL; BC006540; AAH06540.1; -; mRNA.
DR   PIR; I38167; I38167.
DR   UniGene; Hs.558537; -.
DR   MEROPS; M67.004; -.
DR   Ensembl; ENSG00000185515; Homo sapiens.
DR   H-InvDB; HIX0018936; -.
DR   HGNC; HGNC:12185; BRCC3.
DR   LinkHub; P46736; -.
DR   RZPD-ProtExp; IOH5049; -.
DR   RZPD-ProtExp; S0572; -.
DR   RZPD-ProtExp; Z0234; -.
DR   GO; GO:0000152; C:nuclear ubiquitin ligase complex; IDA.
DR   GO; GO:0030234; F:enzyme regulator activity; IDA.
DR   GO; GO:0005515; F:protein binding; IPI.
DR   GO; GO:0006974; P:response to DNA damage stimulus; IEP.
DR   GO; GO:0010165; P:response to X-ray; IDA.
DR   InterPro; IPR003639; Mov34-1.
DR   InterPro; IPR000555; Mov34_MPN_PAD1.
```

```
DR   Pfam; PF01398; Mov34; 1.
DR   ProDom; PD363422; Mov34-1; 1.
DR   SMART; SM00232; JAB_MPN; 1.
KW   Alternative splicing; Chromosomal rearrangement; DNA damage;
KW   Proto-oncogene; Ubl conjugation pathway.
FT   CHAIN         1    316       BRCA1/BRCA2-containing complex subunit 3.
FT                                /FTId=PRO_0000213967.
FT   VAR_SEQ     184    208       Missing (in isoform 1).
FT                                /FTId=VSP_003261.
FT   CONFLICT    225    225       G -> W (in Ref. 2).
SQ   SEQUENCE   316 AA;  36072 MW;  5720358C1A2F7421 CRC64;

  Query Match             100.0%;  Score 1630;  DB 1;  Length 316;
  Best Local Similarity   100.0%;  Pred. No. 5.7e-119;
  Matches  316;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MAVQVVQAVQAVHLESDAFLVCLNHALSTEKEEVMGLCIGELNDDTRSDSKFAYTGTEMR 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MAVQVVQAVQAVHLESDAFLVCLNHALSTEKEEVMGLCIGELNDDTRSDSKFAYTGTEMR 60

Qy         61 TVAEKVDAVRIVHIHSVIILRRSDKRKDRVEISPEQLSAASTEAERLAELTGRPMRVVGW 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 TVAEKVDAVRIVHIHSVIILRRSDKRKDRVEISPEQLSAASTEAERLAELTGRPMRVVGW 120

Qy        121 YHSHPHITVWPSHVDVRTQAMYQMMDQGFVGLIFSCFIEDKNTKTGRVLYTCFQSIQAQK 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 YHSHPHITVWPSHVDVRTQAMYQMMDQGFVGLIFSCFIEDKNTKTGRVLYTCFQSIQAQK 180

Qy        181 SSESLHGPRDFWSSSQHISIEGQKEEERYERIEIPIHIVPHVTIGKVCLESAVELPKILC 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 SSESLHGPRDFWSSSQHISIEGQKEEERYERIEIPIHIVPHVTIGKVCLESAVELPKILC 240

Qy        241 QEEQDAYRRIHSLTHLDSVTKIHNGSVFTKNLCSQMSAVSGPLLQWLEDRLEQNQQHLQE 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 QEEQDAYRRIHSLTHLDSVTKIHNGSVFTKNLCSQMSAVSGPLLQWLEDRLEQNQQHLQE 300

Qy        301 LQQEKEELMQELSSLE 316
              ||||||||||||||||
Db        301 LQQEKEELMQELSSLE 316
```

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne Holleran, whose telephone number is (571) 272-0833. The examiner can normally be reached on Monday through Friday from 9:30 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms, can be reached on (571) 272-0832. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Official Fax number for Group 1600 is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Anne L. Holleran
Patent Examiner
May 7, 2008

/Larry R. Helms/
Supervisory Patent Examiner, Art Unit 1643